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<110> Ludevid, Dolores
      Torrent, Margarita
      Alvarez, Inaki
      Perez, Pascual

<120> Amino acid-enriched plant protein reserves, particularly
      lysine-enriched maize gamma-zein, and plants expressing such
      proteins

<130> 50062/004001

<140> US 09/117,246
<141> 1998-12-03

<150> PCT/FR97/00167
<151> 1997-01-28

<150> FR96/01004
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<170> PatentIn version 3.3

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Ala Thr Ser Thr His Thr Ser Gly Gly Cys Gly Cys Gln Pro Pro Pro
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Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val
        50                      55                      60

cac ctg cca ccg ccg gtc cat gtg ccg ccg ccg gtt cat ctg ccg ccg        240
His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro
65                      70                      75                      80

cca cca tgc cac tac cct act caa ccg ccc cgg cct cag cct cat ccc        288
Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Pro Gln Pro His Pro
                    85                      90                      95

cag cca cac cca tgc ccg tgc caa cag ccg cat cca agc ccg tgc cag        336
Gln Pro His Pro Cys Pro Cys Gln Gln Pro His Pro Ser Pro Cys Gln
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Leu Gln Gly Thr Cys Gly Val Gly Ser Thr Pro Ile Leu Gly Gln Cys
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gtc gag ttt ctg agg cat cag tgc agc ccg acg gcg acg ccc tac tgc        432
Val Glu Phe Leu Arg His Gln Cys Ser Pro Thr Ala Thr Pro Tyr Cys
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tcg cct cag tgc cag tcg ttg cgg cag cag tgt tgc cag cag ctc agg        480
Ser Pro Gln Cys Gln Ser Leu Arg Gln Gln Cys Cys Gln Gln Leu Arg
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cag gtg gag ccg cag cac cgg tac cag gcg atc ttc ggc ttg gtc ctc        528
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His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro
65                      70                      75                      80


Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Pro Gln Pro His Pro
                85                      90                      95


Gln Pro His Pro Cys Pro Cys Gln Gln Pro His Pro Ser Pro Cys Gln
            100                     105                     110


Leu Gln Gly Thr Cys Gly Val Gly Ser Thr Pro Ile Leu Gly Gln Cys
            115                     120                     125


Val Glu Phe Leu Arg His Gln Cys Ser Pro Thr Ala Thr Pro Tyr Cys
    130                     135                     140


Ser Pro Gln Cys Gln Ser Leu Arg Gln Gln Cys Cys Gln Gln Leu Arg
145                     150                     155                     160


Gln Val Glu Pro Gln His Arg Tyr Gln Ala Ile Phe Gly Leu Val Leu
                165                     170                     175


Gln Ser Ile Leu Gln Gln Gln Pro Gln Ser Gly Gln Val Ala Gly Leu
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Leu Ala Ala Gln Ile Ala Gln Gln Leu Thr Ala Met Cys Gly Leu Gln
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gcc acc tcc acg cat aca agc ggc ggc tgc ggc tgc cag cca ccg ccg   96
Ala Thr Ser Thr His Thr Ser Gly Gly Cys Gly Cys Gln Pro Pro Pro
           20   25   30

ccg gtt cat cta ccg ccg ccg gtg cat ctg cca cct ccg gtt cac ctg   144
Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu
        35   40   45

cca cct ccg gtg cat ctc cca ccg ccg gtc cac ctg ccg ccg ccg gtc   192
Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val
    50   55   60

cac ctg cca ccg ccg gtc cat gtg ccg ccg ccg gtt cat ctg ccg ccg   240
His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro
65   70   75   80

cca cca tgc cac tac cct act caa ccg ccc cgg atc gaa ttc aaa cca   288
Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Ile Glu Phe Lys Pro
               85   90   95

aag cca aag ccg aag cca aaa gaa ttc aaa cca aag cca aag ccg aag   336
Lys Pro Lys Pro Lys Pro Lys Glu Phe Lys Pro Lys Pro Lys Pro Lys
           100   105   110

cca aaa gaa ttc ctg cag ccc ctg cag gga acc tgc ggc gtt ggc agc   384
Pro Lys Glu Phe Leu Gln Pro Leu Gln Gly Thr Cys Gly Val Gly Ser
          115   120   125

acc ccg atc ctg ggc cag tgc gtc gag ttt ctg agg cat cag tgc agc   432
Thr Pro Ile Leu Gly Gln Cys Val Glu Phe Leu Arg His Gln Cys Ser
    130   135   140

ccg acg gcg acg ccc tac tgc tcg cct cag tgc cag tcg ttg cgg cag   480
Pro Thr Ala Thr Pro Tyr Cys Ser Pro Gln Cys Gln Ser Leu Arg Gln
145   150   155   160

cag tgt tgc cag cag ctc agg cag gtg gag ccg cag cac cgg tac cag   528
Gln Cys Cys Gln Gln Leu Arg Gln Val Glu Pro Gln His Arg Tyr Gln
               165   170   175

gcg atc ttc ggc ttg gtc ctc cag tcc atc ctg cag cag cag ccg caa   576
Ala Ile Phe Gly Leu Val Leu Gln Ser Ile Leu Gln Gln Gln Pro Gln
          180   185   190

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agc ggc cag gtc gcg ggg ctg ttg gcg gcg cag ata gcg cag caa ctg       624
Ser Gly Gln Val Ala Gly Leu Leu Ala Ala Gln Ile Ala Gln Gln Leu
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acg gcg atg tgc ggc ctg cag cag ccg act cca tgc ccc tac gct gct       672
Thr Ala Met Cys Gly Leu Gln Gln Pro Thr Pro Cys Pro Tyr Ala Ala
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            20                  25                  30


Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu
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Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val
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His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro
65                  70                  75                  80


Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Ile Glu Phe Lys Pro
                85                  90                  95


Lys Pro Lys Pro Lys Pro Lys Glu Phe Lys Pro Lys Pro Lys Pro Lys
            100                 105                 110


Pro Lys Glu Phe Leu Gln Pro Leu Gln Gly Thr Cys Gly Val Gly Ser
        115                 120                 125


Thr Pro Ile Leu Gly Gln Cys Val Glu Phe Leu Arg His Gln Cys Ser
    130                 135                 140


Pro Thr Ala Thr Pro Tyr Cys Ser Pro Gln Cys Gln Ser Leu Arg Gln
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6

Gln Cys Cys Gln Gln Leu Arg Gln Val Glu Pro Gln His Arg Tyr Gln
                165   170   175

Ala Ile Phe Gly Leu Val Leu Gln Ser Ile Leu Gln Gln Gln Pro Gln
                180   185   190

Ser Gly Gln Val Ala Gly Leu Leu Ala Ala Gln Ile Ala Gln Gln Leu
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gcc acc tcc acg cat aca agc ggc ggc tgc ggc tgc cag cca ccg ccg   96
Ala Thr Ser Thr His Thr Ser Gly Gly Cys Gly Cys Gln Pro Pro Pro
                20   25   30

ccg gtt cat cta ccg ccg ccg gtg cat ctg cca cct ccg gtt cac ctg   144
Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu
            35   40   45

cca cct ccg gtg cat ctc cca ccg ccg gtc cac ctg ccg ccg ccg gtc   192
Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val
        50   55   60

cac ctg cca ccg ccg gtc cat gtg ccg ccg ccg gtt cat ctg ccg ccg   240
His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro
65   70   75   80

cca cca tgc cac tac cct act caa ccg ccc cgg cct cag cct cat ccc   288
Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Pro Gln Pro His Pro
                85   90   95

7

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Gln Pro His Pro Cys Pro Cys Gln Gln Pro His Pro Ser Pro Cys Gln
            100                 105                 110

atc gaa ttc aaa cca aag cca aag ccg aag cca aaa gaa ttc ctg cag          384
Ile Glu Phe Lys Pro Lys Pro Lys Pro Lys Pro Lys Glu Phe Leu Gln
            115                 120                 125

ccc ctg cag gga acc tgc ggc gtt ggc agc acc ccg atc ctg ggc cag          432
Pro Leu Gln Gly Thr Cys Gly Val Gly Ser Thr Pro Ile Leu Gly Gln
        130                 135                 140

tgc gtc gag ttt ctg agg cat cag tgc agc ccg acg gcg acg ccc tac          480
Cys Val Glu Phe Leu Arg His Gln Cys Ser Pro Thr Ala Thr Pro Tyr
145                 150                 155                 160

tgc tcg cct cag tgc cag tcg ttg cgg cag cag tgt tgc cag cag ctc          528
Cys Ser Pro Gln Cys Gln Ser Leu Arg Gln Gln Cys Cys Gln Gln Leu
                165                 170                 175

agg cag gtg gag ccg cag cac cgg tac cag gcg atc ttc ggc ttg gtc          576
Arg Gln Val Glu Pro Gln His Arg Tyr Gln Ala Ile Phe Gly Leu Val
                180                 185                 190

ctc cag tcc atc ctg cag cag cag ccg caa agc ggc cag gtc gcg ggg          624
Leu Gln Ser Ile Leu Gln Gln Gln Pro Gln Ser Gly Gln Val Ala Gly
        195                 200                 205

ctg ttg gcg gcg cag ata gcg cag caa ctg acg gcg atg tgc ggc ctg          672
Leu Leu Ala Ala Gln Ile Ala Gln Gln Leu Thr Ala Met Cys Gly Leu
    210                 215                 220

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Pro Val His Leu Pro Pro Pro Val His Leu Pro Pro Pro Val His Leu
        35                  40                  45
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8

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His Leu Pro Pro Pro Val His Val Pro Pro Pro Val His Leu Pro Pro
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Pro Pro Cys His Tyr Pro Thr Gln Pro Pro Arg Pro Gln Pro His Pro
                85   90   95

Gln Pro His Pro Cys Pro Cys Gln Gln Pro His Pro Ser Pro Cys Gln
            100   105   110

Ile Glu Phe Lys Pro Lys Pro Lys Pro Lys Pro Lys Glu Phe Leu Gln
        115   120   125

Pro Leu Gln Gly Thr Cys Gly Val Gly Ser Thr Pro Ile Leu Gly Gln
    130   135   140

Cys Val Glu Phe Leu Arg His Gln Cys Ser Pro Thr Ala Thr Pro Tyr
145   150   155   160

Cys Ser Pro Gln Cys Gln Ser Leu Arg Gln Gln Cys Cys Gln Gln Leu
                165   170   175

Arg Gln Val Glu Pro Gln His Arg Tyr Gln Ala Ile Phe Gly Leu Val
            180   185   190

Leu Gln Ser Ile Leu Gln Gln Gln Pro Gln Ser Gly Gln Val Ala Gly
        195   200   205

Leu Leu Ala Ala Gln Ile Ala Gln Gln Leu Thr Ala Met Cys Gly Leu
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Pro Lys

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Pro Lys Pro Lys Pro Lys Pro Lys Pro Lys Pro Lys Pro Lys
            20                  25                  30



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            20   25   30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            35   40   45

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
    50   55   60

<210> 23
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
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<400> 23

Lys Pro Lys Pro Lys Pro Lys Pro Lys Lys Pro Lys Pro Lys Pro Lys
1   5   10   15

Pro Lys

<210> 24
<211> 20
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<213> Artificial Sequence

<220>
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<400> 24

Lys Pro Lys Pro Lys Pro Lys Pro Lys Glu Phe Lys Pro Lys Pro Lys
1   5   10   15

Pro Lys Pro Lys
            20

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<220>
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<400> 25

Pro Lys Pro Lys
1